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NO. 7371 P. 1

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PTO IDENTIFIER: MS Missing Parts  
Application Number 10/535525  
Inventor: Wolfgang Paulus et al.

MESSAGE TO: US Patent and Trademark Office  
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PAGES (Including Cover Sheet): 10

CONTENTS: Transmittal Of Translation Of International Preliminary Examination Report  
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Application No. (if known): 10/535525

Attorney Docket No.: 13111-00021-US

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Transmittal Of Translation Of International Preliminary Examination  
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NO. 7371 P. 3

Application No.: 10/535525

Docket No.: 13111-00021-US

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re Patent Application of:  
Wolfgang Paulus et al.

**AUG 04 2005**

Application No.: 10/535525

Group Art Unit: N/A

Filed: May 18, 2005

Examiner: Not Yet Assigned

For: ENZYMATIC SYNTHESIS OF POLYOL  
ACRYLATES

**TRANSMITTAL OF TRANSLATION OF INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

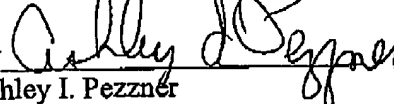
MS Missing Parts  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Applicant submits herewith a translation of the International Preliminary Examination Report ("IPER"). Each reference cited in the IPER have been cited by Applicant in an Information Disclosure Statement. The European Patent Office deemed that claims 1-15 were novel and had inventive step, and claims 1-23 had industrial applicability.

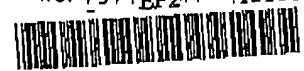
The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 03-2775, under Order No. 13111-00021-US:

Respectfully submitted,

By   
Ashley I. Pezzner

Registration No.: 35,646  
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## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

|   |  |   |
|---|--|---|
| Applicant's or agent's file reference<br>M/43256-PCT                                      | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |   |
| International application No.<br>PCT/EP2003/013106  | International filing date (day/month/year)<br>21 November 2003 (21.11.2003)  | Priority date (day/month/year)<br>22 November 2002 (22.11.2002) |
| International Patent Classification (IPC) or national classification and IPC<br>C12P 7/62 |  |   |
| Applicant<br>BASF AKTIENGESELLSCHAFT  |  |   |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

|   |  |
|---|--|
| Date of submission of the demand<br>03 June 2004 (03.06.2004) | Date of completion of this report<br>21 February 2005 (21.02.2005) |
| Name and mailing address of the IPEA/EP                       | Authorized officer   |
| Facsimile No.   | Telephone No.  |

Form PCT/IPEA/409 (cover sheet) (July 1998)

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/013106

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
 pages 1-23, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages 1-23, filed with the letter of 07 December 2004 (07.12.2004)
- ☐ the drawings:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/13106

## I. Basis of the report

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

1. The amended claims 1-23 do not go beyond the original disclosure in the international application as filed (PCT Article 34(2)(b)).

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/13106

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

|                               |        |       |     |
|-------------------------------|--------|-------|-----|
| Novelty (N)                   | Claims | 1-15  | YES |
|                               | Claims | 16-23 | NO  |
| Inventive step (IS)           | Claims | 1-15  | YES |
|                               | Claims | 16-23 | NO  |
| Industrial applicability (IA) | Claims | 1-23  | YES |
|                               | Claims |       | NO  |

## 2. Citations and explanations

1. This report makes reference to the following documents:

- D1: US-A-5 240 835 (PETTRONE FRANK A ET AL), 31 August 1993 (1993-08-31)
- D2: DATABASE WPI Section Ch, Week 198610 Derwent Publications Ltd., London, GB; Class A96, AN 1986-064968 XP002278747 & JP 61 015898 A (AJINOMOTO KK), 23 January 1986 (1986-01-23)
- D3: US-A-4 534 916 (WICHTERLE OTTO), 13 August 1985 (1985-08-13)
- D4: EP-A-0 351 534 (MITSUI TOATSU CHEMICALS), 24 January 1990 (1990-01-24)
- D5: EP-A-0 317 860 (BASF AG), 31 May 1989 (1989-05-31)
- D6: DATABASE WPI Section Ch, Week 198918 Derwent Publications Ltd., London, GB; Class A25, AN 1989-135527 XP002278748 & JP 01 081812 A (TOYO INK MIT FREUNDLICHEN GRÜSSEN CO), 28 March 1989 (1989-03-28)
- D7: DE 38 03 972 A (SCHERING AG), 10 August 1989 (1989-08-10)
- D8: EP-A-0 523 681 (BEHRENSDORF JOHANNES), 20 January 1993 (1993-01-20)

PCT/EP 03/13106 (Box V) (January 1994)

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/13106

2. Novelty and inventive step (PCT Article 33(2) and 33(3))

- 2.1 The present application relates to an enzymatic process for preparing polyol acrylates using hydrolases (E.C.3...), to monomer and polymer polyol acrylates, and to their use for producing heat-curable and/or radiation-curable lacquers.
- 2.2 D1 discloses enzymatic preparation processes of polymerisable monomers. Acrylic acid esters of polyols are also described as polymerisable monomers. The biocatalyst used is derived from the *Corynebacterium oxydans* bacteria, i.e. both whole cells and isolated enzymes, in particular transacylases, or cell-free extracts with a plurality of enzymes, are used, emphasis being evidently laid on transacylase activity. Any possible hydrolase activity can be regarded as being marginal and not necessary for the process described in the reference document. The reaction is based on the transesterification (transacylation) of acrylic esters with corresponding polyols, including monosaccharides, oligosaccharides and polysaccharides. Both D1 and the other prior art documents fail to disclose a process for preparing polyol acrylates using hydrolases. Consequently, claims 1-15 should be considered novel. D1, as the closest prior art, also fails to give any indication of the promising use of hydrolytic enzymes, i.e. the subject matter of claims 1-15 should also be regarded as being inventive.

The further claimed monomer and polymer polyol



## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

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acrylates and their uses for producing lacquers and paints (claims 16-23) are not novel in the light of the disclosures of the prior art documents D2 to D8. The product claims are drafted in the so-called product-by-process format. Polyol acrylates which are already known from the prior art are not rendered novel because of a different preparation process. The objections put forth by the applicant, that polymers useful as lacquer components having improved properties can be produced from the polyol acrylates produced according to the invention, may be true for hitherto unknown products or product mixtures, but such products or product mixtures are not explicitly defined in the claims. Reaction products that are enzymatically produced are directly dependent on reaction conditions (such as reaction time, concentration, etc), i.e. the structure of the end product, polyol acrylate, can be controlled by the choice of reaction conditions. Both the number of hydroxyl groups to be acylated and regioselectivity and/or stereoselectivity are parameters that need to be considered. This was not taken into account when the claims were drafted. Any actually novel subjects are not restricted from the known prior art, i.e. polyol acrylates of whatever composition and structure. Consequently, at least parts of the above-mentioned claims 18-23 must be regarded as lacking novelty.

The further processing of the polyol acrylates produced by the method as per claims 1-15 is neither novel nor inventive, since polyol acrylate polymerisation is part of the prior art.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/13106

3. Industrial applicability (PCT Article 33(4))

All the present claims meet the requirements of PCT Article 33(4) for industrial applicability.

4. Further defects of the international application  
(clarity - PCT Article 6)

- 4.1 Claim 23 is characterised by a desideratum (the lacquers should not be sticky after thermal curing only) that leaves a person skilled in the art unclear as to what technical features achieve this desired result. This contravenes the clarity requirement.

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